THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

New Series.] Thursday, September 10, 1868. [Vol. II.—No. 6.

Original Communications.

GRADUATING THESIS ON THEIN.

By Herbert James Pratt.

Mr. Editor,—The following article on Thein was prepared by its author as his graduating thesis, and presented to the Faculty of the Medical Department of Harvard College last July. It contains the record of a number of carefully conducted and original experiments on man and the lower animals. Their value is such that they deserve a better fate than to be consigned to the shelves of a College Library, and I have therefore transmitted them to you for publication in your Journal. The author of the article is now in Europe, and I have taken the above liberty with his thesis without his knowledge. If he were here, I should have advised him to publish it himself, and spared you this note.

Yours, &c., Edw. H. Clarke,
Prof. Mat. Medica, Harvard College.
Boston, Sept. 1, 1868.

Thein ($C_3 H_5 N_2 O_2$), the alkaloid of tea, was discovered in 1833, by Oudry. It occurs in quantities varying from one to six per cent., according to the variety of tea. Nor are the same varieties always equally rich in this substance, the amount being determined in a great degree by the preparatory processes which the leaf undergoes, in some of which the prolonged exposure to oxygen, in a dry or moist state, or with the temperature raised—as the case may be—alters the material properties of the leaf, while at the same time there results this diminution in the amount of the alkaloid—it being understood that every variety of Chinese tea is originally gathered from a single species, the Thea Sinensis.

This alkaloid, besides being found in coffee, occurs in two South American plants, the Ilex Paraguayensis and the Paullinia Sorbilis, two plants which are very generally used in South America as tea and coffee are with us, supplying the place of these two articles. Thein thereby seems to satisfy a natural craving of the race; men having, as it were by instinct, hankered for and found a satisfying substance in these four plants, in which chemistry has but lately shown this common base. A desire so unacquired and so world-wide for this substance, shows that thein fills an important part amongst the simple aliments, and renders its thorough examination particularly interesting. It should be said, however, with regard to thein and caffeine, that, although identical in composition, they have lately been shown to be different in their physiological effects; a difference, however, only of degree, the phenomena following the administration of thein being produced by one half the corresponding quantity of caffeine. (*Archives de Physiologie*, No. 3, 1868.)

Like the tea-leaf, of which it is a constituent, thein contains a very large amount of nitrogen, there being twenty-nine per cent. in this alkaloid, than which but very few organic substances contain more.

It crystallizes in handsome acicular crystals, with a silky, abestos-like lustre, which are most soluble in hot water, slightly in cold water and chloroform, and in ether scarcely at all. The basic properties of thein are feeble, it forming stable salts with comparatively few acids, and in some of its combinations even playing the part of an acid. As first prepared, it is an hydrate, having two per cent. of water. This it loses if heated above 100°, together with its silky lustre; at 110° becomes anhydrous, and at 177° fuses into a transparent liquid, subliming unchanged if the temperature be raised to 384°. As before stated, the shape of its crystals is acicular, which is true in every mode of its preparation except one, when the alkaloid is deposited in hexagonal-pointed and very hard prisms; nor can either of these two forms be made to assume the crystalline properties of the other.

Thein can be obtained by adding to a decoction of green tea a sufficient amount of sub-acetate of lead. Filter, and remove excess of lead from filtrate by passing through the liquid a current of sulphide of hydrogen. Filter again, evaporate filtrate, decolorizing with animal charcoal, and the thein crystallizes out, as above stated. This description of a few words gives very little idea of the many gallons of liquid to be manipulated, and the many weeks required to complete the process and obtain a pure product; as I found in my own experience, having recently prepared this alkaloid in the Laboratory at Cambridge.

Thein has a bitter taste, but far less so than most other alkaloids. In the plant, it is supposed to be formed by the decomposition to Protein $(C_{18} H_{27} N_4 O_6) S$. When taken into the stomach, it is probably decomposed to a certain extent into its ultimate elements, on account of its peculiar composition, as regards an excess of nitrogen—organic substances of this class theoretically finding it more difficult to pass the stomach intact, where the working influences are so strongly directed towards the modification of nitrogenous substances and the formation of albumenose. No experiments, however, have been tried of the effects of the pure gastric juice on thein; so that the comparatively small quantity taken in each cup of tea may, for all we know to the contrary, be decomposed entirely before it enters the system, and furnish its modicum of nitrogen as so much pure and harmless food.

From the similarity of composition between thein and taurin $(C_4 NS_2 H_7 O_6)$, Liebig supposes that its chief use in the economy is to contribute to the formation of bile.

It is not known, when thein is absorbed into the system, whether it exists in the blood as such, or as a salt. The probability is, however, that it remains pure; for the lactate and acetate of thein do not exist, and the hydrochlorate is only formed by solution in the most concentrated acid, and is, moreover, decomposed by water.

Its long-continued presence in the blood is said by some authors to diminish the red corpuscles and increase the organic constituents. Of the times and manner of its elimination our knowledge is very imperfect; the composition of thein rendering it, as before stated, peculiarly difficult to study in this respect, on account of the power which the assimilative processes may have over it, compelling the alkaloid to yield up more or less nitrogen, and consequently any peculiar power it might have originally possessed. However, if injected beneath the tissues, this objection no longer exists. The chemical test for thein is the same as for uric acid (the murexide test), so that in those conditions where the two are likely to be present together, it would be difficult to distinguish them.

In its physiological action, thein is a nervous sedative. The following notes are given to show, to some slight extent, its effects on man. From their almost entire want of completeness and scientific detail, they possess hardly more than a negative interest. Such as they are, however, I will give them a place.

I have administered thein in five cases to healthy young men, and in doses ranging from two to eighteen grains. In doses under four or five grains, there were no very marked effects, except a diminution in the frequency of the pulse, and subsequent wakefulness, more or less lasting, according to the amount taken.

Case I.—Gave to a man of 24 years theinæ gr. vi. by subcutaneous injection. He had a naturally high pulse, although at the time of experiment it was rather more so than usual. At 10, A.M., took the thein, pulse 86, respiration 14.

At 10.25,	A.M.,	p. 84.	
" 10.40,	"	p. 68.	
" 10.60,	"	p. 68;	resp. 14.
" 11.15,	"	p. 70.	
" 11.30,	"	p. 70.	
" 11.45,	"	p. 64;	resp. 16.
" 12.00,	M.,	p. 68.	
" 12.15,	P.M.,	p. 66	Increased frequency of micturition; urine very pale.
" 12.30,	"	p. 64	
" 12.45,	"	p. 68	

There were no other phenomena noticed at the time; no change in pupils. This case is a fair standard of the effects of the drug on the pulse, if exception be taken that the average descent is not so great, even as the average pulse is not so high. This is with four, six or eight grains. In all of these doses, the mode of administration was by subcutaneous injection, and the wakefulness characteristic of the alkaloid was at times noticeable, but not always.

Case II.—I took myself, theinæ gr. xii., at about 2, P.M., by the mouth, and about two hours after there came on a state of great physical restlessness, and at the same time a very uneasy state of mind, which Lehmann describes in this connection as a "mental anguish." Soon after, there was a tremulousness, most marked in my hands and arms. On attempting to write and control the muscles of the hand, the hand trembled so violently that it was impossible to write with any regularity, nor could it be restrained for more than a few seconds. My mind was also in an excessively uncomfortable and anxious state, which admitted not the slightest rest, whether I sat or lay, or attempted reading. This lasted perhaps two hours, when there were no other phenomena, except sleeplessness until 2, A.M., having gone to bed at 10; meanwhile the mind was in a state of most active and persistent thinking, in spite of all attempts at forgetfulness.

CASE III.—Subject 26 years old, well and strong. This case is more than usually incomplete, because in the midst of the effects of the thein he ate a hearty dinner and drank a glass of wine, which would, perhaps, make some difference in the results.

At 12.30, P.M., took thein gr. iv. by injection, gr. viij. by the mouth.

At 12.30, P.M.,	p. 66.	
" 1, "	p. 57.	
" 1.30, "	p. 62	considerable tremulousness.
" 1.50, "	p. 56	
" 2, "	dinner.	

At 3.15, P.M., pulse 68. Not much more nervous than after two cups of strong coffee. Up to this time micturition frequent, and urine very pale. Took thein gr. vi. by mouth.

At 4.40, P.M.,	p. 76.	
" 5.50, "	p. 67	Excessive mobility and tremulousness. Diuresis continues.
" 6.05, "	p. 84	
" 6.30, "	p. 85	
" 7.15, "	p. 70	

Last abundant micturition at 7.15, P.M. After that, no records were taken of the pulse. The trembling continued through the first part of the evening, when it was following by a state of calmness, but very great wakefulness. The patient sat up till between 3 and 4, A.M., when, as it were to court sleep, he lay on the bed, looking about the room, and thinking, until breakfast. But the most interesting part of this night of unrest was what he described as his increased brain-power, enabling him to read certain books, which he had before accounted abstruse, with the greatest ease, and an extraordinary power of grasping the subject without any effort, as he read rapidly on.

Feeling curious to know more of this effect on the activity of the brain—which would render an agent giving it so invaluable in some emergencies, if the payment were not too severe—I spoke of it to one of the most prominent writers amongst our New England women.

She, too, had tried it—in the modified form of green tea—when she had been much pressed to do a large amount of writing in a short time. Some hours after taking a large quantity of tea—to use her own words—she felt as if there was nothing left but her head, which furnished rapidly language or ideas of the best quality and in goodly quantity all night long. The next day, there was headache and more or less prostration.

Dr. Johnson, as is well known, confessed himself a slave to his tea. Indeed, this power of tea over the intellectual functions, although never scientifically investigated, has from long reputation almost become an accepted fact; just as with opium we connect an increased power of imagination and fancy.

In an article on Thein and Caffeine, published by Dr. Robert Amory, in the Boston Medical and Surgical Journal, May 28, 1868, he describes, in several cases of animals poisoned by these substances, the *post-mortem* appearances of the brain as follows. Cerebellum slightly injected in two cases, in one of which, when the encephalon was exposed, the sinuses were turgid and filled with dark blood. The spinal axis from the cerebellum had no abnormal appearance or congestion. In another case there was a slight injection of the lining membranes of brain, especially in the vicinity of cerebellum. With these exceptions, no experiments have been tried, to my knowledge, of the action of thein on the brain; which, if attempted, would be of great interest, not only on account of the increased functional power of the cerebrum, but also with regard to the remarkable influence this alkaloid has in causing wakefulness.

Any such experiments would have a certain connection with Hammond's theory—that sleep is caused by anæmia of the brain; and could be performed in the same manner by trephining the skulls of dogs or rabbits.

If Hammond's theory is true, the brain ought to be most congested by thein, and rendered most anæmic by narcein—the most powerful agent known in producing sleep. I regret that I can offer no more than the suggestion of such experiments, and feel again as if I ought to apologize for inserting the above cases, so very imperfectly observed. They will, however, give a negative evidence that thein in doses of eighteen grains can be given without any more disagreeable effects than diuresis, great tremulousness, a restless and distressed state of mind (a symptom particularly mentioned by Lehmann, and perhaps best described as an exaggeration of the homely phrase "unstrung nerves"), and, finally, wakefulness, and great activity of thought. And it may be said here, that each cup of strong green tea has been estimated to contain one grain of the alkaloid.

As a therapeutic agent, thein has had more or less of a foreign reputation in the treatment of neuralgic headaches—particularly in those of a periodic character.

Given in such cases, and in doses varying from ten to thirty or even sixty grains, it is said to be very effectual. It is given in a way somewhat similar to the manner of administering quinia; giving from ten to thirty grains in all, at intervals, stopping a few hours before, or even carrying the drug up to the very time of the attack. The Paullinia Sorbilis, which has more recently come into notice in the treatment of neuralgic headaches, probably owes whatever efficacy it may possess to the presence of thein. There is a very great discrepancy in the statements published about this alkaloid, as a medicinal agent; some of the French journals saying that it is dangerous to give more than two or three grains of the citrate—the common form in which thein is given—and of which it should be said in this connection that it has no chemical existence, being a mechanical mixture of the acid and the base, both of which crystallize from the mixed solution in their respective forms. Almost all the European journals of 1850 have articles on the curative power of thein—or rather its power of giving relief in certain forms of neuralgia. The *Lancet* refers to two long articles as very complete on this subject, published in the *Presse Médicale*, Brussels, 1850.

The expression, "every dog has his day," if the comparison be not too lowering, seems to fit well upon most medicines, and none more so than thein; which in its time, laying aside the more prosaic preparations of pill and powder, was made into a thein ointment for the hair, that it might enter the system unawares, in cases where the patient could not be induced to take it by the mouth; or, what was still more luxurious, pastilles were made of it, which by their burning gave to the atmosphere of a room a soothing effect, which was again very desirable for irritable nerves. If such had truly been the effects of thein pastilles, it is impossible that they should have failed in securing a world-wide reputation.

Part. II.

On the Action of Thein on the Nervous System of Toads.—The following experiments I have made with my friend, Mr. Frederick Ware, of the present graduating class; not knowing at the time the action of this drug on the system, excepting from a general notice in a number of the *Lancet*, 1852 (vol. xviii., p. 491), where it spoke of it as acting particularly on the spinal cord. In trying these experiments I have found the greatest assistance and guidance in a pamphlet published in Paris, 1851, by M. Bonnefin,* a pupil of Dr. Brown-Séquard.

It was with much gratification that both Mr. Ware and myself found our most important results confirmed in Dr. Amory's article, before referred to, where he states that the peculiar action of thein on the muscles had been noticed by Dr. Brown-Séquard, in a number of the *Archives de Physiologie*.

Orfila has divided poisons into the following four classes:—Irritants, narcotics, narcotico-irritants, and septics. In the thesis of M. Bonnefin, each of these classes is sub-divided into convulsing and non-convulsing poisons, according to their peculiar action on the system; by far the greater part of poisons belonging to the former sub-division. Premising that a general experiment has shown thein to be a convulsing poison, it is necessary to solve the following questions:—

1st. Upon what part of the organism thein may act to give this effect.

2d. What is its mode of action?

Convulsions having as a fundamental element muscular contraction as their cause, when they exist in a case of poisoning it is necessary to find out, first of all, whence comes this excitation of the muscular fibres. A poison can excite muscular contractility in four ways:—1st. Directly. 2d. By acting on the motor nerves. 3d. By acting on the sensor nerves. 4th. By acting on certain parts of the nervous centres capable of acting themselves directly or by reflex action on the muscles.

The mode of action must also be studied, whether it be by direct excitation of the poison on the nerve, or equally by the irritation of the nerve by some peculiar conditions of the system induced by the poison; or, whether it be simply by augmenting the functional power of some of the part or parts above mentioned. These two modes of action are easily distinguished. Suppose an animal to have been poisoned with an agent causing convulsions, all voluntary and respiratory movements having ceased; if the convulsions still exist without any external excitation, they are due to a corresponding internal excitation by the poison. But if they occur only after some external stimulus, they occur because the poisonous agent has acted to increase the functional power of certain parts; which is by far the most common mode of action.

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* Recherces Expérimentales sur l'Action Convulsivant des Principaux Poisons.

The muscular contractions caused by thein are somewhat different in their character from those caused by strychnia. At the commencement there is the usual rapid and abrupt contraction of the parts; but as the phenomena go on, the muscle seems to act sluggishly, requiring quite an interval to contract and relax, very unlike the muscular alacrity when strychnia is the agent. This slowness of action soon merges into a state of tonic muscular contraction, which becomes one with the *rigor mortis;* so that the convulsions produced by thein are peculiar in this way. The spinal cord works at a disadvantage, having to deal with muscles already very much contracted by the local action of the poison on their fibres. The absolutely increased power of the cord, therefore, can only slightly show itself by working on the rapidly waning muscular irritability, adding a small acute spasm to a spasm already great and permanent; supposing for a moment that spasms can be chronic; while in the case of strychnia the coast is clear.

In proving the following propositions, I shall endeavor to mention only the phenomena immediately concerning the point to be proved, thereby avoiding much unnecessary complication.

N. B.—The use of toads instead of the usual frogs in these experiments was a matter—not of choice but of necessity.

Proposition I.—*It is not by its action on the brain that thein causes convulsions.*

I injected beneath the skin of each of two toads theinæ gr. ij., the brain having been destroyed in one of them. The uninjured toad ceased breathing within two minutes; the two were then equally deprived of respiration and voluntary motion. On dropping a pencil upon that part of the table near which they lay, convulsions occurred with equal violence in each.

II.—*The convulsions produced by thein do not result from a direct irritation of either muscles or nervous system, but from an increase of the functional power of a certain part or parts.*

I injected beneath the skin of a toad thein. gr. ij. Within one minute the fore-legs were rigidly flexed, and immediately after the hind legs were extended in a similar rigid manner. The animal soon ceased breathing. During this time there were one or two rapid convulsions. After the breathing ceased, however, the animal was perfectly quiet (the heart continuing to beat), but was instantly thrown into convulsions by any external stimulus. Had the action of the thein been that of a direct stimulus—or rather irritant—no external irritation would have been needed to bring about these phenomena.

Motor Nerves.

III.—*It is not by any direct action on the motor nerves that thein causes convulsions.*

This has, perhaps, been shown already in the experiment proving that thein never causes convulsions by direct action. The following experiment will but confirm it. I removed from a toad the lower part of the spinal cord, whence arise the nerves leading to the posterior limbs. I then injected thein. gr. i. beneath the skin, the poison having free access to the motor nerves, as such, of the posterior limbs, without the complication of the spinal cord—those limbs having become completely paralyzed after the destruction and removal of the cord. The muscles of both anterior and posterior limbs now became rigid, but convulsions occurred only in the former, although the latter were perfectly capable of spasmodic movement, as was shown on applying the poles of a battery to one of the sciatic nerves. If thein caused convulsions by its direct action on the motor nerves, the posterior extremities would have been so affected in this experiment.

IV.—*The functional activity of the motor nerves is neither increased nor diminished perceptibly by thein.*

In this experiment, as a preliminary step, I injected beneath the skin of a toad a very minute quantity of strychnia—not enough to cause any of the characteristic phenomena—the presence of strychnia not interfering at all with the study of the motor nerves (Dr. J. Wyman). The medulla oblongata having been destroyed, I laid bare the two sciatic nerves, and placing a piece of glass beneath each, buried the right nerve, as it ran over the glass, in a paste of thein and water. Irritation along the back of the animal showed no increase in the energy of the right motor nerves of the leg, the convulsions being equally marked in either limb. Irritation of the upper part of the bared sciatics had the same result.

But that the sciatic nerve can be and is affected by the local application of the alkaloid, will be shown when the sensor nerves are experimented upon.

SENSOR NERVES.

V.—*It is not by its action on the sensor nerves that thein causes convulsions.*

I killed a toad by destroying the medulla oblongata. I then severed, close to the spinal cord, the posterior or sensor roots of the three nerves coming from the right posterior limb. That limb instantly lost all reflex power. I then injected beneath the skin of the toad thein. gr. ij. External irritation applied either to the fore-parts of the body or to the left hind-foot caused general convulsions, the posterior limbs being affected equally; whereas, if thein caused convulsions by its action on the sensor nerves alone, the right posterior limb—whence their function had been removed—would have remained quiet in this experiment.

VI.—*Thein acts to diminish the power of the sensor nerves.*

I killed a toad by destroying the medulla oblongata, and at the same time isolated the right sciatic nerve, causing it to pass over a plate of glass before reëntering the body. An exceedingly minute quantity of strychnia was then injected, as in a preceding experiment, but not enough to give rise to any of the characteristic phenomena; it being suggested in this case, as in one before mentioned, by Dr. Jeffries Wyman, on account of the convenience of an increased energy of the cord, in the final demonstration.

I then covered that portion of the sciatic nerve which lay on the glass with a paste of thein and water, having previously tested the reflex power in both hind-feet, and finding it the same in each.

(N. B.—The sensor filaments of the crural nerve are entirely eliminated in this experiment, their ultimate distribution being confined to the skin of the thigh—the leg and foot of the toad being altogether supplied with sensor filaments from the sciatic nerve. In this case, as the effects of the alkaloid on the sensor filaments of the sciatic nerve only are to be observed, it is important to remember that the sensory functions of this nerve are isolated in the foot and leg, to which parts experiments must be confined, if we wish to avoid crural complications, and, consequently, imperfect results.)

Ten minutes after the thein was applied, irritation of the hind-feet by scratching or tickling showed that the reflex power in the right leg was very much less than in the left. Twenty-three minutes later, the same test gave absolutely no signs of reflex power in the right foot, the reflex power in the left foot, meanwhile, having remained unimpaired.

But that the function of the sensor nerves subjected to the influence of thein was only diminished and not destroyed, was shown by applying the more powerful stimulus of the poles of a galvanic battery to the foot, when reflex phenomena were again called forth.

An experiment was now tried, which showed very beautifully the elective power of thein for the sensor nerves. The irritation of scratching or tickling applied to the fore-parts of the body caused convulsions, which were equally violent in both posterior limbs, while the same stimulus applied to the hind-feet, gave signs of sensor power only in the left. The thein paste surrounding the sciatic had selected the sensor and left untouched the motor filaments of this mixed nerve.

MUSCULAR SYSTEM.

VII.—*It is not by its action on the muscles* (per se) *that thein causes convulsions.*

A toad was killed by destroying the medulla oblongata. I then passed a cord beneath the spinal column, and, with the exception of the spine itself, ligated the whole body at a point above the bifurcation of the aorta. Communication was therefore entirely cut off between the fore- and hind-parts of the body, excepting, of course, by the spinal cord. Thein. gr. i. was injected beneath the skin of the fore-parts. The usual muscular rigidity soon became apparent, but only in the anterior parts of the body. All the muscles of the posterior parts, to which the poison had no access, were perfectly relaxed, except during the occurrence of the characteristic spasms, when the whole body (poisoned and unpoisoned parts) was convulsed; whereas, if the convulsions were caused by the action of thein on the muscles by themselves, the posterior limbs, to which the poisoned blood had no access, would have remained quiet.

VIII.—*Thein has a peculiar elective action on the voluntary muscles, throwing them rapidly into a state of extreme and tonic contraction, soon exhausting their functional power by the speed and intensity with which it works.*

(N. B.—This applies, as stated, only to the voluntary muscles, so far as the following experiments are concerned, not having investigated the action of thein on the involuntary muscles, except that I have noted, as regards the heart, that it continues to beat half an hour, or even an hour in one case, after the animal has ceased breathing, according to the size of the dose given.

Dr. Amory, in his article on Thein and Caffeine, before referred to, has studied with much care the effects of the alkaloid on the involuntary muscles, and says:—"The involuntary as well as the voluntary muscles are stimulated till their death or loss of power, as shown by the continued discharges from bowel and bladder." The functions of the sensor nerves being much diminished by thein, might also account for these phenomena, by the consequent inability of these muscles to impress their needs upon the spinal cord, and obtain thence the requisite incitement to contraction, which usually holds them in that state and prevents the involuntary escape of any matter. The action of belladonna in relaxing the rectum is a case in point; and I have seen in several cases, where it has so happened that a watery cathartic and a large dose of belladonna have coëxisted in the system, an entirely involuntary defæcation, the patient being made aware of the fact by the presence of fæcal matter in the bed.)

To return to the subject of the influence of thein on the voluntary muscles.

Having repeatedly noticed, in experimenting with this poison upon animals whence the lower part of the spinal cord had been removed, that the posterior limbs, although not convulsed, were always rigid, the motor nerves being shown to be unaffected, it seemed probable that the thein had an action peculiar to the muscles themselves. To prove this more thoroughly, I performed the following experiments.

1st. I severed the two posterior limbs of a toad from the body, and removed from them the skin. I then placed one in a wineglass containing thein. gr. i. in solution, and the other in a corresponding glass of pure water. In fifteen minutes I removed the two. That which had been immersed in pure water was of course relaxed, and retained perfect muscular contractility when tested by galvanism. But the leg immersed in thein was rigidly extended on the thigh. All the muscles of the limb were hard, round and tense, nor were they in the least affected by the poles of a battery.

2d. I soaked the leg and thigh of a toad in woorara until the function of the motor nerves was entirely destroyed, as tested by applying the poles of a galvanic battery to the sciatic nerve. Muscular irritability, however, still remained, and in a state of complete isolation from nervous influences. I then placed the limb in a solution of thein. gr. i., when, as before, all the muscles were soon rendered stiff and tense, and their irritability destroyed.

3d. Isolated muscles placed in a solution of thein became hard and fully contracted, as if each individual muscle was in active use. Muscles left in water the same time—three minutes—were entirely unaffected.

4th. I subjected some muscle to the influences of a weak solution of thein, beneath the microscope. The fibres instantly began to contract, and the striæ were seen working to and fro with a kind of vermicular motion, soon becoming exhausted. But if the solution of thein was stronger, the muscular fibres were instantly and violently contracted, the sarcolemma being thrown into wrinkles, and the ends of the fibres being turned up and rounded, instead of long and spindle-shaped, so violent was the action of the poison.

Thein probably causes death by the exercise of its peculiar power on the muscles of respiration, whereby they become perfectly rigid, and breathing is prevented—the animal ceasing to respire at the same time that those parts of the muscular system immediately under observation become permanently contracted.

Two grains of thein, when injected beneath the skin of a toad, cause death certainly within three minutes, the heart always continuing to beat a long time after.

As a therapeutic agent, laying aside its uninvestigated action on the brain, one would think that in small doses it might be used as a tonic to the muscles, muscles always being supposed to grow by exercise and consequently by irritation. Therefore this agent, thein, acting as a continued stimulus, if not too continued and too powerful, would theoretically cause the muscular system to wax in strength and vigor; and the skill of the physician would be shown by giving it in neither too frequent nor too great doses, lest the stimulation should be followed by a state of too great exhaustion—nor in such large doses that the brain should become involved. The tremulousness which occurs after a man has taken twelve or eighteen grains of thein, I should attribute, in a great degree, to the fatigued state in which the thein has left the muscles after having worked its will upon them.

Summary.

From the foregoing facts are drawn the following conclusions, the influence of thein on the brain not having been investigated:

1st. Thein causes convulsions by augmenting the reflex properties of the spinal cord.

2d. Thein diminishes the energy of the sensor nerves.

3d. Thein has a peculiar action on the voluntary muscles—causing their extreme and persistent contraction, and exhausting thereby all further irritability.

The above conclusions I have satisfactorily demonstrated on animals to Dr. Jeffries Wyman, my former teacher, who kindly allowed me to call upon his time for this purpose.

Hospital Reports.

BOSTON CITY HOSPITAL.

Record of some of the more important Operations for the Month of May, 1868. (Continued.) Reported by F. W. Draper, House-Surgeon.

Case V.—*Encephaloid Tumor of Calf of Leg.* (Service of Dr. Geo. Derby.)—J. C., aged 35, single, and by occupation a laborer, had first noticed, two years ago, a small, mole-like, bluish excrescence in the centre of the calf. A tumor gradually developed from this beginning, which, at the time of entrance, was of the size of a goose-egg. It was attached to the skin by about half its inferior surface, and its outer aspect was mottled, exuding a thin, fœtid fluid. The growth had been painless.

The diseased mass was excised, the skin only being found affected. The wound was left to heal by granulation. Recovery was slow, the patient's general condition being decidedly debilitated.

Case VI.—*Dropsy of the Antrum.* (Service of Dr. Derby.)—K. E. M., a healthy, unmarried woman, aged 32, noticed, seven years ago, a slight swelling above the right ala nasi. Its growth was slow, and, in great measure, painless. She presented herself at the hospital, complaining chiefly of the deformity of the tumor, which had now attained the size of a walnut, and occupied the canine fossa of the upper jaw. Within the lips could be felt a projection with thin bony wall, at the roots of the molar teeth, evidently continuous with the growth externally. The nostril was not obstructed, and the palate was unaffected.

Under ether, the wall of the antrum was punctured with a small-sized trocar at the most prominent point of the projection inside the lip. Half an ounce of thin, yellowish fluid was withdrawn, which, under the microscope, contained cholesterine plates in abundance. The tumor at once collapsed. Some swelling of the face supervened, but soon subsided, and the patient was discharged, well, in nine days. She was, however, re-admitted in a week, the former symptoms having returned, indicating that the antrum had refilled. It was again punctured, and about ℥iss. of fluid evacuated. The orifice was now kept open by daily probing, and subsequently by means of a small gold-plated canula, which was retained during the day and removed at night. A purulent discharge soon took the place of the serous, but this gradually subsided, and patient was again discharged after two weeks.

Case VII.—*Compound and Comminuted Fracture of Tarsus; Amputation of Leg.* (Service of Dr. Geo. Derby.)—D. S., aged 53, male, while sitting on the front steps of a horse-car, was thrown under the car as it passed around a curve. Both wheels passed over the left foot, inflicting injuries as follows:—the skin upon the dorsum, and in the sole, was extensively lacerated and dissected from the subjacent tissues; the soft parts were completely disintegrated, and were especially mangled across the centre of the foot, marking the passage of the wheels; the tarsal and metatarsal bones were comminuted, the fragments being freely exposed, so that the foot was held in place, chiefly, by the tendons and ligaments, which had not been divided. Besides these injuries to the foot, there were contusions and abrasions of the skin in other parts. The patient was collapsed to a marked degree at the time of entrance to the hospital, one hour after the injury, and stimulants were administered accordingly. The face was blanched, in consequence, partly, of the shock, and, partly, of the hæmorrhage, which was represented as having been excessive; and probably, in part also, of a general anæmic condition. There was a smart hæmorrhage from the numerous divided vessels in the foot, which was readily controlled by the tourniquet applied to the thigh.

The leg was amputated, by Dr. Derby, six inches below the knee, a skin flap being dissected anteriorly, while the posterior flap was cut from the muscles of the calf. The extreme fluidity and non-coagulable condition of the blood rendered the control of the subsequent hæmorrhage a matter of embarrassing difficulty. Twenty-seven ligatures were applied to divided vessels, and, the steady oozing not subsiding under the application of ice, resort was finally had to liquor ferri persulphatis. The stump was tightly bandaged, and a cold-water dressing was applied. During the operation, the constant tendency to sinking was combatted by enemata of brandy. The loss of blood amounted to ℥vi. The shock, from the outset, was extreme, and the patient did not rally, but, in spite of all attempts at stimulation, continued to sink, and, in six hours after the amputation, he died.

Case VIII.—*Dislocation of Tarsus; Reduction.* (Service of Dr. Geo. Derby.)—J. S., a laborer, aged 31, while in the act of trundling a wheelbarrow loaded with coal, along a staging from a schooner to a coal-yard, fell to the wharf below, a distance of twenty feet, striking, as he asserted, fairly on the sole of his left foot. This foot, on entrance to the hospital, immediately after the injury, presented an appearance exactly analogous with that of talipes valgus, the sole being flattened and rolled partially outward. The scaphoid bone was thrown inward, forming a well-marked protuberance. In the centre of the dorsum, over the middle cuneiform bone, was a distinct depression, as if that bone had been driven downward into the sole. The ankle-joint was unaffected.

The patient was etherized. Extension being made in the longitudinal axis of the foot, manipulation of the tarsus caused the bones to resume their positions, and the foot was brought into normal shape at once. The whole tarsus was still very movable, as if from extensive laceration of ligaments.

Considerable pain and swelling ensued, but recovery subsequently was steady, and the patient was discharged, well, in three weeks.

The Weight of a Fluid-ounce. — The Troy ounce weighs 480 grains. The Apothecaries' ounce weighs 480 grains. The Avordupois ounce weighs 437·5 grains. The Imperial fluid-ounce *weighs* 437·5 grains. The Wine Measure ounce *weighs* 455·7 grains. Thus the minim, Imperial measure, weighs ·91 grains, and the Wine Measure minim weighs ·95 grains.

It need scarcely be remarked that the Wine Measure ounce, U. S. P., is that commonly employed by druggists and physicians.—*N. Y. Medical Record.*

Bibliographical Notices.

The Endoscope and its Application to the Diagnosis and Treatment of Affections of the Genito-urinary Passages. Lessons given at the Necker Hospital by A. J. Desormeaux, Surgeon of the Hospital, Member of the Surgical and Anatomical Societies of Paris. Translated by R. P. Hunt, M.D. Re-printed from the Chicago Medical Journal. Chicago. 1867.

This book consists of five lectures, the 1st devoted to the history and description of the instrument, the healthy urethra and acute urethritis. It is probably from inadvertency that the name of Dr. Fisher, of this city, is not quoted, as he had devised an instrument, identical in purpose, as far back as 1824.

2d. This chapter treats of gleet and granular urethritis. Under the latter head is the description of that granular condition of the urethra similar to granular conjunctivitis and vaginitis. This, according to Dr. Desormeaux, is always due to gonorrhœa proper, is accompanied by gleet, and constitutes the first stage of stricture. Between this and herpetic, or arthritic gleet, the diagnosis is impossible without the endoscope, an important point, as the treatment of the two affections is widely different.

3d. Referring to gleet and strictures. These latter the author divides into three classes, i. e., granular, transition, and cicatricial, each requiring a different treatment.

4th. Relating to the endoscopical exploration of cicatricial stricture and to urethral fistulæ.

5th. Devoted to the prostate, the bladder and calculi. One species of calculus, that imbedded in the walls of the bladder (enchatonné), has been diagnosticated four times by M. Desormeaux, whilst the ordinary means of exploration are so imperfect that the existence of the species has been denied by many celebrated surgeons.

Being re-printed from the *Chicago Medical Journal,* we can hardly complain of the absence of diagrams and the lithographic illustrations of the urethra, bladder and calculi, which add much to the value of the original. The index, a very important part of any work, is also lacking. With the exception of a few errors, such as enchainment for enchatonné, the translation is well done, and the thanks of the non-French readers among the profession are due to the late Dr. Hunt for the most complete monograph that has yet been written upon the endoscope. M.

Medical and Surgical Journal.

BOSTON: THURSDAY, SEPTEMBER 10, 1868.

THESES AND PRIZE ESSAYS.

No better sign of medical progress among our students marks the present day than the publication in European languages of theses and papers such as those we now have before us,* and the scientific and experimental character of essays from the graduates of our own School, such as the one which occupies the leading place in our JOURNAL for this week.

It is indeed time that something was done to break the torpor and the listlessness of our contemporaries in the schools. New machinery for grinding out doctors is yearly added to our educational institutions, but it has been mainly of the kind to multiply and hasten graduations, rather than to raise the quality of the work produced. New and cheap schools are multiplied to meet the wants of new districts for new and cheap physicians.

Any symptom of the decline of superficial professional learning, any sign of reviving thoroughness and honest work, are, therefore, most grateful.

The thesis of Dr. Livermore on the "Nervous Complications of Acute, Articular Rheumatism," is a very creditable essay on a subject which is attracting attention abroad, and of which this JOURNAL recently published a well-marked case.†

The little monograph of Dr. Warren is illustrated by a well-cut plate of the dermal structures implicated in cheloides.

The thesis on Thein we necessarily leave to our readers' judgment.

A not less favorable omen of the times is the improved character of the essays offered for the Students' Boylston Prize. For two years past they have exhibited a zeal, labor and finish which is a great advance over the former average.

The recent prizes conferred on Expectant-Medicine through a member of the Massachusetts Medical Society, were also richly merited.

Whatever can awaken research is to be hailed as a happy presage of the future. By this means only can we raise the standard of education, and, hence, our profession; and we feel convinced that were others to establish prizes, biennial, triennial, or even at longer intervals, as large as those offered in France and England, they would call out the best efforts of the best men, and produce essays of standard merit as monographs.

NEW MEDICAL JOURNAL.—We have received the second number of the *Provincial Medical Journal*, of Halifax, N. S., edited by Drs. W. B. Slayter and R. W. McKeasney. This is a new quarterly Journal of 16 octavo pages, of about the size and shape of this JOURNAL. We wish it success, and hope it may exert a beneficial influence on the profession of the Provinces.

HOW TO UTILIZE LEECHES. *Mr. Editor,*—A paragraph with the above title was copied from *Once a Week* into the JOURNAL of the 3d inst., giving the credit of the invention to the "German doctors." There is nothing new in the discovery that they may be tapped and continue sucking. As long ago as when I was physician to the Boston Dispensary (1845), we used to puncture them with a cataract needle or the point of a lancet, while at work. Leeches were not so abundantly supplied as we then thought necessary, and this was tried satisfactorily. One leech would often do the work of two or three. The United States Dispensatory says:—"Leeches will continue to suck after their tails are cut off, which is sometimes done, though it is a barbarous practice." Puncturing does not kill them, and some physicians have emptied them in that way, as they are less injured than by stripping, salting or pickling.

C. E. BUCKINGHAM, M.D.

Boston, September 5, 1868.

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* (1.) Thèse pour le Doctorat en Médecine, présentée et soutenue à la Faculté de Médecine de Paris, par Frank Livermore (Né à Cambridge, Etats Unis d'Amérique), Docteur en Médecine.

(2) Ueber Keloid, von J. Collins Warren, aus Boston, America.

(3.) Experimental Researches on Thein, a Thesis presented to the Medical Faculty of Harvard University, by F. H. Pratt, M.D.

† Case of Rheumatism combined with Chorea, &c., by Hall Curtis, M.D., Boston. Vol. I., N. S., No. 20.

Interosseous Suture in Operation for Double Hare-lip.—In a recent number of *L'Union Médicale* is given an abstract of a paper read by M. Broca before the Société Impériale de Chirurgie, in which he advocates a modification of the operation of Blandin for double hare-lip complicated with projection of the intermaxillary bone.

Although several methods have been proposed by surgeons to save the intermaxillary bones in these cases, they have hitherto only partially succeeded in obtaining the desired result, and the usual custom is still to excise the projecting portion of bone before bringing together the separated parts of the lip. To avoid this loss of bone, tending as it does to interfere with the proper development of the maxillary arch and involving the loss of the upper incisors, M. Broca has proposed the following operation:—

An inverted V-shaped piece is removed with scissors from the septum of the nasal fossæ, the base of the V being the lower border of the vomer, and its width such that when the intermaxillary bones are pushed back its branches are in contact. The hæmorrhage arising from one or two small arteries contained in a bony or cartilaginous canal, which have been divided by this proceeding, is checked by galvanic cautery. The edges of the intermaxillary tubercle and of the maxillary bones are then refreshed, and they are united by two silver wire sutures. The bringing together of the soft parts must vary somewhat according to the case, and is not different from the methods employed when the intermaxillary tubercle is removed.

This operation M. Broca has twice performed.

The first patient was a poorly nourished infant thirteen days old, which the mother refused to nurse unless the operation was immediately performed. For two days after, everything appeared well, but the mother then disappeared with the child. The second was the child of a physician, two months and a half old. The soft parts were quite widely separated, and the intermaxillary bones projected three fifths of an inch. Eleven months after, there was firm bony union, but the incisor teeth had not yet appeared.

M. Broca suggests that it might be better to operate at first only on the bones, waiting a few weeks or months before bringing the soft parts together. He thinks that after the reduction of the bony projection, the median fleshy tubercle existing in such cases would elongate and assist better in the formation of the lip.

Modern Homœopathy.—From the *London Monthly Homœopathic Review* we find that the fourth object of the founders of the London Homœopathic Hospital was, not is, to "let inquirers see of what homœopathic treatment consists, and *wherein it differs from other methods of cure.*" But the position is now assumed, that "when a physician adopts homœopathy he does not bind himself to use medicines on no other principle. His first and chiefest obligation is to the patient." His second duty only is due to homœopathy, for he must do the best within his knowledge for the promotion of his patient's recovery or relief. "When a case, or part of a case, is without the sphere of homœopathic law; in other cases where his knowledge of the practice fails him; and, again, where a suitable palliative appears to be demanded, he is bound to use other than homœopathic means. This is always required in private practice." . . . All these objects are subservient to the interests of the sick, for the editor says:—"We all know and admit that there are cases in which the most conscientious and painstaking (homœopathic) practitioners feel compelled to fall back upon auxiliary (allopathic) aids to eke out a modicum of relief, or indeed to assist in curing."

Accordingly, in the London Homœopathic Hospital, in which the cases "are not of so serious a character as one is accustomed to see under treatment in hospital," black wash is applied to syphilitic sores, and ½-grain doses of mercury given internally. Cases of glandular enlargement in the neck were treated with tincture of iodine, painted on externally. For cases of continued sleeplessness, $\frac{1}{18}$ of a grain of acetate of morphia was given every fifteen minutes.

The Hospital physicians repudiated, one and all, the fallacies and absurdities of Hahnemann about infinitesimal doses and dilutions. They quietly told an inquiring physician "that the doses were not a part of *their* system; that like cures like was all *their* creed;" although it is not a matter of general or partial belief that morphia keeps people awake; that iodine produces enlargement of the glands; and black wash produces syphilis.

These hospital physicians, and many others, have at last returned to the use of the medicines of the rational school in appreciable quantities; and the editor says the treatment in the above cases "was far too like allopathy to be advisable in a homœopathic hospital," although, "so long as the doses of mercury did not induce mercurialism, our opponents cannot (or rather should not) complain." He also says he would avoid painting a glandular enlargement in the neck with tincture of iodine publicly in a homœopathic hospital, although he might unhesitatingly do it in private practice; and formally admits:—"As regards the giving of morphia for sleeplessness, however necessary it may have been considered by the medical attendant, it cannot be called homœopathic treatment."

The homœopathic editor trusts his readers will thoroughly understand that he has no wish to object to those methods of treatment *per se*, although unsuitable for a hospital called homœopathic.

We are hardly surprised to find that Dr. Yeldham, the principal physician of the London Homœopathic Hospital, in what is called an excellent speech, delivered at the annual meeting of the institution, referred to the possible expediency of a middle school, which would embrace both homœopathy and allopathy; and Dr. Reith said he knew many homœopathists who are prepared for the coalition.—*Chicago Med. Examiner.*

REMUNERATION IN THE MEDICAL PROFESSION.—It is not our complaint that we do too much labor, knowing that we shall never get a cent for it—that we expect, when we enter a profession the sole aim of which is to prevent and alleviate human misery. Nor is it that we so often receive as our only return for conscientious exertions ungrateful slander and injury—that every one who knows mankind, *diese verdammte race*, as King Fritz used to call it, is prepared for. Nor is it wholly that some who can pay and ought to pay, don't and won't pay—this, too, in some degree, is of common occurrence in every business. But what we do complain of is that physicians themselves do all they can apparently to induce the general public to disregard the claims of their medical attendants.

How often do we see physicians underbidding one another? How often are the fee bills disregarded, lest a stingy patient should call in a cheaper doctor? In how many instances do practitioners of some respectability agree to attend families by the month or year—a degrading and injurious habit? Then by common consent not only is nearly all business done on credit, but collections are made annually, or at best semi-annually.

Dozens of families in every community live for years without paying a doctor's bill, not that they do not receive constantly his services, but that as soon as he insists on payment they discharge him and call in a competitor. Thus they go the whole round of doctors, and entirely escape any outlays for their services.

A physician is expected to come whenever sent for, at any hour, at any distance, to any case. If he refuses because he knows his time will be lost, he often loses good patients by the reputation for heartlessness he acquires. Should he place his accounts in the hands of a collector, a certain number of his good customers feel offended and probably send for some one else when sick next time.

As we said, the fault here lies in great measure in the profession itself. Let us have no more underbidding of any kind; let fee bills be carefully made and judiciously adhered to; let "black lists" of families who can and yet do not pay, be made out and distributed; let collections be more frequent, office advice always charged, and charged cash when possible, and promptitude in payments more decidedly insisted upon.

We welcome, as an advance, the intelligent action taken by the Mahanoy City (Pa.) Medical Society, a young organization lately started on a sound, sensible basis. Two of its resolutions are as follows, and we should like to see them adopted and acted on by every medical society in the country.

"*Resolved*, That to attain the better procurement of just and reasonable compensation for professional services it is necessary to discipline our patrons to promptness in the settlement of bills for medical attendance; by promptness on our part in our efforts to collect *monthly* all bills standing unpaid; by demonstrating that we, like themselves, positively expect our pay and intend to collect it monthly.

"*Resolved*, That each member report monthly the names of his *habitually* delinquent patrons; that a Record of the same be kept by the Secretary of this Society for the use of all the members; and in every case where such delinquent, with the obvious motive of defrauding the physician to whom he is indebted, applies to another physician, who is a member of this society, for medical advice or attendance for either himself or family, the physician to whom he thus applies shall positively and firmly refuse to extend to said delinquent his professional services, unless said services are compensated in money or its equivalent, at the time each and every service is rendered."

When these principles of action are carried into effect we may safely count on a great improvement in the social and financial position of physicians.—*Medical and Surgical Reporter.*

Operation of Tracheotomy.—In compliance with an invitation from the New York Obstetrical Society, Dr. Krackowizer made some remarks on Tracheotomy, and gave the results of his own experience. In common with other surgeons, he had met with very unexpected success in occasional cases of the most hopeless kind. He had seen tracheotomy save a child in whom the disease had proceeded even to such a stage as to produce almost complete anæsthesia. In other instances, again, the most promising cases failed. Much will depend upon the power of individual resistance. He had operated in fifty-six cases, of which sixteen recovered, and forty died. The greater number of the fatal cases (about thirty) died from a continuation of the exudative process, or from bronchitis. One died from asphyxia during operation; one died fifty-six days after the operation from the formation of a pendulous growth from the cicatrix of the wound, which mechanically obstructed the larynx. Three died from infectious diphtheria; one from subsequent scarlatina; four from exhaustion and pulmonary œdema. If after tracheotomy, the patient remains relieved for twenty-four hours, and then begins to suffer from dyspnœa, cyanosis, etc., the disease is progressing. No one of the successful cases was under two years of age. Besides tracheotomy, the only treatment in which he has any confidence is the application of ice to the larynx, and the sustaining of the patient's strength. He had observed in a certain number of cases an intermittent radial pulse, which was independent of any irregularity in the heart's action. He had never seen any explanation of this phenomenon, but believed it must depend upon some pressure made upon the subclavian artery at the first rib by the fascia collis during the movements of the larynx and other parts in the struggle for breath.

Dr. Peaslee submitted some statistics which he had seen in one of the journals of the results of tracheotomy in a large number of cases, which were as follows: In 1024 cases of croup, in which the trachea was opened, 220 recovered; i. e., 21.48 per cent. Most of these occurred in Europe. In 509 cases of diphtheria, in which the operation was performed chiefly by French practitioners, 137 recovered, or one in 37·9.

The term diphtheria is probably here used as synonymous with croup, and not to designate the constitutional disease now known by that name.—*American Journal of Obstetrics.*

Cases of Copper Poisoning occurring amongst the Out-patients of St. Thomas's Hospital. By Edward Clapton, M.D., Assistant-Physician to the Hospital.—About a year ago a sailor came under my care suffering from chronic gastro-enteritis and other symptoms indicative of some metallic poisoning. He was a miserable object, and stated that he had been compelled during the whole time of a long voyage to drink lemon-juice which was kept in a copper tank. He informed me that all the crew suffered similarly to himself. I intended seeking out the vessel and making inquiries into the matter, but the man did not make his appearance again—the unsatisfactory and not uncommon occurrence amongst the out-patients, especially in respect of the most interesting and important cases. One peculiarity in this man's symptoms, which I made a particular note of at the time, was the existence of a most marked green line on the margin of the gums, and for some little distance on the teeth.

Not long after I noticed a similar appearance in a young woman who was an artificial flower maker, and who stated that she was in the habit of inhaling the dust of verdigris and Scheele's green, which she was obliged constantly to use in her business.

Last week, again, a patient came under my care in whom the same appearance was observed—viz., a dark green line on the edge of the gums, and a similar stain along at least half of each tooth. He was a coppersmith, working at Penn's Factory, Deptford. His general symptoms, which were of a chronic character, were vertigo, gastrodynia, flatulence, dyspnœa, frequent vomiting, some degree of wasting of the body, and a peculiar coppery taste. His tongue was moist and flabby, and pulse hard and full. He mentioned that there were fifteen others working in the same shop, and, in consequence of the information which he gave me I called at the factory to-day, and was permitted to inspect the premises, and to examine the rest of the workmen.

Even with the greatest care, it is impossible to prevent the inhalation of copper particles or fumes. The dust of the shop, when viewed in a bright ray of light, can be distinctly seen to be charged with bright metallic particles. Water, too, kept in any vessel in the room for a short time, can be shown, by tests, to be charged with copper. The fumes given off during the process of strongly heating the copper for the purpose of joining appear to be most injurious. The workmen say they have rarely suffered from any definite illness, but all complained of lassitude and giddiness, and a disinclination, when not at work, to take exercise or "to go about," as other workmen. Some of them were exceedingly thin and pallid. *All of them had a green stain on their teeth*, of different shades of color, varying from a light bright green to a dark greenish brown. Their perspiration had a bluish-green tinge. I examined the flannel waistcoats of several, and found them deeply stained, especially under the arms. One of them stated that, even after a hot bath on Saturday night, his white shirt next day, if in hot weather, would be quickly discolored. I noticed, too, that the wooden handles of all the hammers were stained green, from perspiration of the hands.

I briefly mention these cases now in the hope of gaining further information as to these appearances, which I have not seen noticed; but I shall recur to the subject in a paper on an allied disease (plumbism), which I have in preparation.—*Medical Times and Gazette.*

ALBUMINURIA OF PREGNANCY.—Dr. Lente reports the following case in the New York *Medical Record*:—

As I kept no notes of the case myself, I applied to the physician (Dr. White, of Fishkill, President of the Dutchess County Medical Society), who called me in consultation, and received the following communication:—

"As to the history of the case of Mrs. M., I will endeavor to give it to you as nearly as possible.

"I was called to visit her at 5½, P.M., on Friday, 22d February, 1867. I found her in a comatose and insensible condition, having had two convulsions before I arrived. She had been complaining, during the day, of what they call sick headache up to the time the convulsions came on. The pulse was full, skin hot, bowels constipated; very considerable œdema (of lower extremities). The time of her expected confinement had arrived, but no evidence of labor. I bled her sixteen ounces from the arm, applied ice to head and mustard to the neck, and gave fifteen drops of Magendie's solution of morphine. Within half an hour, she had another convulsion, when I sent for you; and about the time you arrived she had another, when you injected the arm (with morphine ½ grain), and had her bowels moved by an enema, and the bladder evacuated by the catheter; by which operation we obtained but a small quantity of urine, there evidently being but little secretion. After this, she had no more convulsions. Whenever she became uneasy, and gave evidence of their return, she had an injection, *per anum*, of one grain of morphine; this was repeated every six or eight hours, three times, when all unpleasant symptoms disappeared.

"The kidneys became active soon after she was fully under the influence of the morphine. During the day and night of Saturday, she voided seven and a half pints of urine of a natural color. After this, I made no note of the quantity, but remained with her until 3 o'clock Sunday afternoon. The following morning, at 8 o'clock, I was called to her, and found her in labor; and at 11 o'clock, A.M., she was delivered of a full-sized child, with no unpleasant symptoms during or after the labor. She recovered rapidly, and has enjoyed uninterrupted good health since. I saw her this week, and found her in perfect health, and in the sixth month of pregnancy."

I have only to add, in addition to the notes of Dr. White, that the urine was quite turbid *when drawn off*. It was highly albuminous, and presented a most interesting appearance under the microscope. The turbidity seemed to be due to multitudes of a very rare form of uric acid crystals. I have never seen such a variety and abundance of casts in any one specimen as this presented. It was examined also by Dr. Barker, my partner, Dr. Head of the Army, and by Dr. Wm. H. Draper, of New York, who stated, in a letter to me, that he had scarcely ever seen such a beautiful specimen of casts. I endeavored to procure a sample of the patient's urine soon after convalescence; but, as she lives at some distance from me, I have never been able to do so until the middle of June, the 7th month of pregnancy. I found it normal, with no trace of albumen; I, moreover, learned that the patient had always, previous to marriage and since, enjoyed good health, except being subject from childhood to headache. It may be pretty safely affirmed that she has no Bright's disease.—*N. Y. Medical Record.*

EXCISION OF THE ENTIRE CLAVICLE. By W. W. DAWSON, M.D., Surgeon to Commercial Hospital, Cincinnati, O.—Near the middle of August, 1867, J. L. Black, aged about twenty years, son of Dr. Milo Black, of Clay City, Ill., consulted me in reference to a fistula situated on the right side and about midway between the sternum and the point of the shoulder. An examination showed extensive disease of the clavicle.

The following is the history furnished me by Dr. Black: "About the 15th of December, 1866, my son was taken with a pain in his right shoulder, accompanied with a high grade of fever. There was no swelling for the first two or three days, but subsequently it began and extended from the outer point of the right to near the middle of the left clavicle. I applied a blister, and in about one week from the attack erysipelas showed itself upon the breast and extended rapidly until the entire head was involved. His fever now assumed a low typhoid grade accompanied with delirium, hectic, sweating and a total loss of the use of the right arm. This state of things existed for about two weeks, after which abscesses formed over the breast, on the face, and at the left elbow. Occasionally he would complain of great pain in his back, reaching from his right shoulder to the lumbar region. He could neither rise up nor lie down in bed without help for the space of three months. I opened abscesses to the number of ten or twelve; they all finally healed but the one you saw when he called upon you. The treatment consisted first in bloodletting, blistering, alteratives and opiates. Later in the case, tonics, stimulants, and a generous diet were prescribed. The whole trouble I think grew out of a kick from a gun which he received while he was hunting, a few days previous to the manifestation of the first symptoms."

Assisted by Dr. Black, Dr. Jones, of Madisonville, and Dr. Brunning, of the Good Samaritan Hospital, I operated on the 3d of September. In cutting down, I was surprised to find the disease so extensive, involving the entire bone. I decided at once to remove the whole mass.

The line of incision was made over and down to the clavicle. The bone was in a state of necrosis; the acromio-clavicular articulation had perished, hence, at this point, it was not necessary to use the knife.

After the dissection of the clavicle, I found on the outer surface of the first rib a small point of caries about half an inch in length and the width of the bone border; this I removed with the chisel. There was but little hæmorrhage. Water dressings were applied for a few days, then poultices. The wound healed slowly but constantly.

On the 19th of October, forty-six days after the operation, I presented my patient to the Clinical class of the Commercial Hospital, with the wound healed entirely. . . . .

The deformity in this case is very little; a slight depression of the right shoulder is all that can be observed. He has complete use of his arm, and imagines that it is as strong as it ever was.

The tissues in the region of the cicatrix are hard and firm, but what the osteogenic properties of the periosteum which I left, may accomplish in the formation of a new clavicle, is yet to be developed.—*Cincinnati Lancet and Observer.*

THE TREATMENT OF ACUTE RHEUMATISM.—By N. J. BUTLER, L.C.P.L., &c.—As I think many of your readers are not aware of the efficacy of valerian, administered in the form of a bath, in subduing the pain and inflammation attending acute rheumatism, particularly of the arthritic form, I consider I am merely fulfilling a duty to the profession and public by mentioning it. It was first introduced to my notice by my friend, Dr. Adrien—a name known and honored in the annals of Dublin surgery—since which time I had opportunities of testing and proving its wonderful power of arresting and cutting short the most violent attacks of acute rheumatic arthritis. The bath is made simply by taking one pound of valerian root, boiling it gently for about a quarter of an hour in one gallon of water, straining and adding the strained liquid to about twenty gallons of water in an ordinary bath. The temperature should be about 98°, and the time of immersion from twenty minutes to half an hour. Pains must be taken to dry the patient perfectly upon getting out of the bath. If the inflammation remain refractory in any of the joints, linseed meal poultices should be made with a strong decoction of valerian root, and applied.—*Med. Press & Circular.*

THE Governor of Rhode Island has appointed five Commissioners on the cattle disease, which has become a matter of much importance in different parts of the country. The Commissioners are—Dr. E. M. Snow, Providence; Jos. Osborne, Tiverton; Hon. E. R. Potter, Kingston; Samuel W. Church, Bristol; Stephen Harris, Warwick.

Selections and Medical Items.

Pachymeningitis Chronica.—Mellenheimer relates (*Journ. f. Kinderkrank.*, 1868, 96-120) the *post-mortem* examination of a child 21 months old, who exhibited during life all the symptoms of chronic hydrocephalus. On examination after death, there was found within the arachnoidal sac one quart and a half of a greenish-colored thick pus. It was encysted on both sides of the falciform process, occupying the situation of the two hemispheres of the cerebrum. The brain itself was thrust down upon the floor of the cranial cavity, in the form of an elongated roundish mass. The walls of the cyst enclosing the pus were composed of many layers of false membrane, which on one side was adherent to the pia mater and on the other to the dura mater. The cerebellum had undergone but little change. The medullary portion of the cerebrum presented itself merely as whitish striæ, while the convolutions were flattened. The lateral ventricles were enlarged, and the internal portions were softened, while the external gray portion was apparently but little changed. The brain was closely attached to the base of the skull by means of a dense membranous tissue, richly supplied with bloodvessels.—*Centralblatt f. d. Medecin. Wissenschaft—Am. Jour. Med. Sciences.*

Sudden Death occurring during Convalescence from Typhus Fever.—Dr. F. Seunig relates (*Wiener Med. Presse*, 1868, No. 50) a case of sudden death in an unmarried female, 20 years of age, on the 29th day of the disease: in another case, also in an unmarried female, 27 years old, it took place on the 22d day of the disease. In both, death occurred without any premonition and without any appreciable exciting cause. In these cases, on examination after death, it was found that an extravasation of blood had taken place within the cavity of the spine at the lumbar region; consequently it was to meningeal spinal apoplexy that the sudden occurrence of death is to be attributed.—*Ibid.*

Avoidance of Amputation in certain Cases of severe Injury.—Jona. Hutchinson, F.R.C.S., Surgeon to the London Hospital (*Medical Press and Circular*) speaks as follows on amputations: “ Of late years exceedingly few amputations for injuries have been performed by me. The difference in risk to life between a primary amputation and a severe compound fracture seems to be very little. Nor have secondary amputations been favorable when resorted to in patients who were doing badly. You may infer that the patient will ordinarily succumb if the shock of an amputation be added, provided he is bearing the compound fracture badly. In asking medical men to avoid as a general thing the performance of secondary amputation, cases of traumatic gangrene are not included. In summarizing the principal points obtained from experience, he concludes:—1st. As a means of saving the patient from irritation and exhaustion, he thinks less highly of amputation. A compound fracture is very dangerous, but not more than a primary amputation. 2d. In secondary amputations, estimate the local conditions and almost disregard the constitutional ones. 3d. As to the time for secondary amputations—wait until the inflammatory fever has subsided, also until suppuration is established. You may amputate with safety when the wound is granulating, and the patient eats well.—*N. Y. Med. Record.*

Early Pregnancy.—Dr. Horwitz was called to a pregnant girl who had scarcely reached her 12th year, and of whose age there could be no doubt. The menses first appeared during her 10th year and continued regularly. She went through her pregnancy very comfortably. The pelvis was well formed and capacious. The labor proceeded very favorably, and terminated in ten hours with the birth of a strong living male child. She went on very well, and had a plentiful secretion of milk. References are given to other remarkable cases of the kind on record.—*Petersburg Med. Zeitschrift.*

MEDICAL DIARY OF THE WEEK.

Monday, 9, A.M., Massachusetts General Hospital, Med. Clinic. 9, A.M., City Hospital, Ophthalmic Clinic.

Tuesday, 9, A.M., City Hospital, Medical Clinic; 10, A.M., Medical Lecture. 9 to 11, A.M., Boston Dispensary. 10-11, A.M., Massachusetts Eye and Ear Infirmary.

Wednesday, 10 A.M., Massachusetts General Hospital Surgical Visit. 11 A.M., OPERATIONS.

Friday, 9, A.M., City Hospital, Ophthalmic Clinic; 10, A.M., Surgical Visit; 11, A.M., OPERATIONS. 9 to 11, A.M., Boston Dispensary.

Saturday, 10, A.M., Massachusetts General Hospital Surgical Visit; 11, A.M., OPERATIONS.

Books and Pamphlets received.—Criminal Abortion; its Nature, its Evidence, and its Law. By Horatio R. Storer, M.D., LL.B., &c., and Franklin Fiske Heard. Boston: Little, Brown & Co. 8vo. Pp. 215.—Diseases of Children. By Thomas Hillier, M.D. Lond., F.R.C.P., &c. Philadelphia: Lindsay & Blakiston. 8vo. Pp. 402.—Conservative Surgery, with a Report of Cases. By Albert G. Walter, M.D. Pittsburgh: W. G. Johnston & Co. 8vo. Pp. 213.—Vesico-Vaginal Fistula. By Thos. Addis Emmett, M.D., Surgeon-in-chief to the New York State Woman's Hospital, &c. &c. New York: William Wood & Co. 8vo. Pp. 250.—Physicians' Visiting List for 1869. Philadelphia: Lindsay & Blakiston.—Transactions of the New Hampshire Medical Society (Seventy-seventh and Seventy-eighth Anniversaries), 1867 and 1868.—Dr. Walter's Doctrines of Life. Reprinted from the St. Louis Medical and Surgical Journal.—Description of the Douglass Patent Artificial Limbs, Springfield, Ms.—The Use of Pepsine in the Diarrhœa of Infants. By James S. Hawley, M.D., Greenpoint, L. I.—Fourteenth Report upon the Registration of Births, Marriages and Deaths in the State of Rhode Island, for the year ending Dec. 31, 1866. By Edwin M. Snow, M.D.

Deaths in Boston for the week ending Saturday noon, September 5th, 134. Males, 79—Females, 55.—Accident, 5—apoplexy, 3—congestion of the brain, 2—disease of the brain, 2—bronchitis, 2—cancer, 2—cholera infantum, 32—cholera morbus, 1—consumption, 16—convulsions, 3—croup, 2—debility, 3—diarrhœa, 8—diphtheria, 1—dropsy, 2—dropsy of the brain, 5—dysentery, 7—scarlet fever, 1—typhoid fever, 2—disease of the heart, 5—homicide, 1—inflammation of the scalp, 1—insanity, 1—disease of the kidneys, 1—disease of the liver, 2—congestion of the lungs, 1—inflammation of the lungs, 5—marasmus, 3—old age, 3—paralysis, 1—premature birth, 2—puerperal disease, 1—tumor, 2—unknown, 6.

Under 5 years of age, 77—between 5 and 20 years, 5—between 20 and 40 years, 14—between 40 and 60 years, 20—above 60 years, 18. Born in the United States, 97—Ireland, 31—other places, 6.